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(56) Documents Cited
GB 2214420 A GB 0690422 A EP 1023855 A2
EP 0392987 A1 WO 98/18363 A1 WO 90/08488 A1
US 5345646 A US 5224234 A

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(54) Abstract Title
Tooth brush

(57) A tooth brush comprises a body defined by a handle portion 10 and a head portion 20 having a front face 21 to which is affixed an injection moulded unit 30, the unit comprising a base plate 31 and a bristle assembly. The attachment may be releasable or non-releasable.

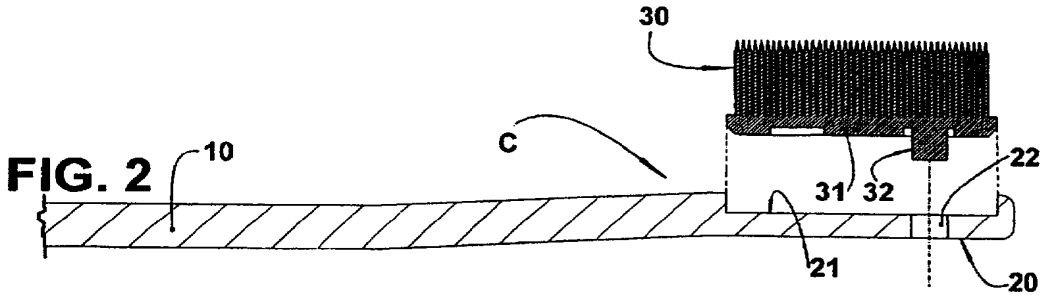

FIG. 2

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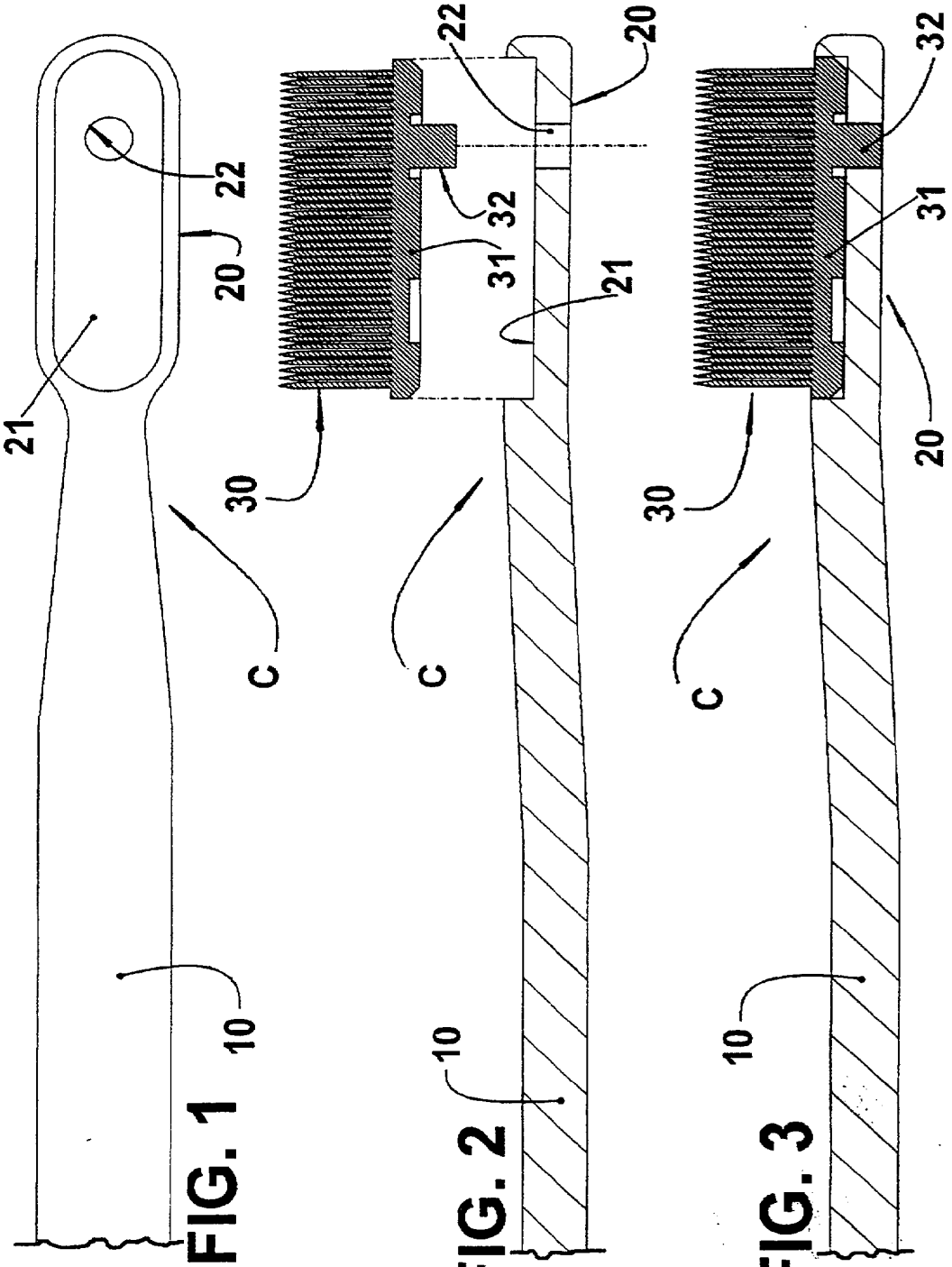

FIG. 1

FIG. 2

FIG. 3

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TOOTH BRUSH

Field of the Invention

The present invention refers to a tooth brush, in which the bristle assembly is obtained by injection of a single piece in an adequate semi-rigid plastic material, such as low density polyurethane, for example.

Background of the Invention

Several tooth brush constructions are already well known in the art, in which the bristles are obtained by injection of a single piece in an adequate material, which is shaped so as to impart to these brushing elements the anatomical, softness and flexibility characteristics required to perform a correct operation.

In one of the known constructions, the tooth brush has the handle, the head and the bristles injected in a single piece, such as proposed in documents FR 2.559.361, US 3.302.230, BR MU 6700603, BR MU 5601232 and PCT/EP98/03696.

Although this constructive solution allows to obtain a tooth brush with a extremely simple and cheap construction, since several manufacturing and mounting operations of the bundles of nylon bristles of the traditional tooth brushes are eliminated, this solution of injecting a single piece has a serious inconvenience, resulting from the different requirements of the materials for the bristles and for the remaining of the tooth brush defined by the head and handle. These different requirements result in serious limitations in the project of the tooth brush, making the design of each of the parts consisting of the handle, head and bristles dependent on the operational requirements of the other of said parts.

Another constructive solution using bristles injected in a single piece, but presenting a more flexible project, is that in which the head of the tooth brush incorporates the bristles in an injected single piece, which may be adapted, usually by fitting the same into a handle, as

suggested in document DE 2728672. While permitting a certain handle portion to be produced in a different material from that proposed to the bristles, this solution further conducts to a mutual dependence of the materials of both the bristles and the head of the tooth brush, said head being further enlarged in order to incorporate the fitting and fixation means to the handle. This result, in terms of project flexibility, is still relatively small.

There are also known in the art the tooth brushes formed of an injected body, comprising the handle and the head in a single piece, the head being provided with fitting means, so as to receive and lock a basic piece carrying the usual plurality of bundles of bristles generally made of nylon. While allowing the independence of materials of the bristles and the body of the tooth brush, this solution suggested in document BR PI 8900425 has the inconvenience of requiring all the operations related to the production and fixation of the bundles of bristles to the basic piece. Thus, even allowing a great flexibility for choosing the material of the body of the tooth brush and for the composition of the bundles of bristles, these tooth brushes have a relatively high cost.

Disclosure of the Invention

It is a general objective of the present invention to provide a tooth brush, which may be easily produced with a low cost and with a great versatility in defining the material to be used for manufacturing the body and the bristles.

It is a more specific objective of the present invention to provide a tooth brush as mentioned above and which has the bristles and the body (which is formed by the handle and by the head for sustaining the bristles) obtained in an injected plastic material.

The tooth brush of the present invention comprises a body consisting of a handle portion and a head portion, having a front face into which is affixed a basic plate incorporating, in a single piece, a plurality of bristles

injected in plastic material.

The tooth brush of the present invention comprises a body defined by a handle portion and a head portion, which is provided with means for receiving and affixing a basic plate incorporating, in a single piece, a bristle assembly.

The above mentioned construction allows the production of a tooth brush, whose body, which is defined by the handle portion and head portion, united or not in a single piece, may be injected or otherwise formed in plastic materials adequate to the function thereof, independently from the plastic material used for injecting the bristle assembly, which is incorporated to the basic plate to be affixed to the head portion of the body of the tooth brush.

Brief Description of the Drawings

The invention will be described below, with reference to the attached drawing, in which:

Figure 1 is a front plan view of a possible embodiment for the body of the tooth brush of the present invention, before mounting the bristle assembly;

Figure 2 is a central longitudinal sectional view of the body of the tooth brush of the present invention, said view illustrating a respective bristle assembly in an exploded position, before its fixation to the head portion of the body of the tooth brush; and

Figure 3 is a similar view to that of figure 2, but illustrating the bristle assembly already affixed to the head portion of the body of the tooth brush.

Description of the Illustrated Embodiment

As illustrated in the attached drawing, the tooth brush of the present invention is obtained by providing a body C having a handle portion 10 and a head portion 20, which are usually made in a single piece of an injected plastic material, said tooth brush being shaped to comply with the structural, functional and esthetic characteristics of the tooth brush project.

While one embodiment for the body C has been illustrated in a single piece, it should be understood that the handle portion 10 and the head portion 20 may be produced in distinct pieces, which will be permanently joined during the mounting process of the tooth brush, or which will be fitted into each other by the user when he wishes to start the tooth brushing operation.

Still according to the illustrated embodiment, the head portion 20 has a flat front face provided with a recess 21, maintaining only a small distance in relation to the peripheral edge of the head portion 20, said recess 21 further having its bottom wall provided with a bore 22 which, in the illustrated example, is also opened to the rear face of the head portion 20, i.e., it is a throughbore.

For making easier the shaping and fitting operations, the recess 21 has an oblong contour and the bore 22 has a circular contour.

As illustrated in figures 2 and 3, inside the recess 21 is tightly fitted a basic plate 31 incorporating, at the front part thereof and in a single piece, a bristle assembly 30, which may be injected in plastic material.

In the illustrated embodiment, the basic plate 31 incorporates a pin 32, usually cylindrical, which is projected from the face of the basic plate 31 opposite to the bristle assembly 30 and which is dimensioned so as to be fitted inside the bore 22 of the head portion 20 when the basic plate 31 is fitted inside the recess 21, as illustrated in figure 3.

It should be understood herein that the fitting of the

basic plate 31 inside the recess 21 may be achieved in order to produce a non-releasable fixation between both parts, or to produce a releasable mounting, allowing the bristle assembly 30 to be replaced by another at any time and as desired by the user, or to be simply temporarily separated from the body C for cleaning the fitting region.

Although only one embodiment has been illustrated herein for the fitting and fixation of the bristle assembly 30 to the head portion 20, it should be understood that different constructive arrangements may be provided in order to guarantee a solid fixation, which may or may not be disassembled by the user.

CLAIMS

1. Tooth brush, characterized in that it comprises a body (C) defined by a handle portion (10) and a head portion (20) having a front face, into which is affixed a basic plate (31) incorporating, in a single piece, a bristle assembly (30).

2. Tooth brush, as in claim 1, characterized in that the bristle assembly (30) is injected in plastic material.

3. Tooth brush, as in claim 1, characterized in that the handle portion (10) and the head portion (20) are formed in a single piece.

4. Tooth brush, as in claim 1, characterized in that the head portion (20) is provided, at its front face, with a recess (21), which is dimensioned to tightly receive and affix the basic plate (31) of the bristle assembly (30).

5. Tooth brush, as in claim 4, characterized in that the recess (21) has its bottom wall provided with a bore (22) and the basic plate (31) incorporates, at its rear portion, a pin (32) projecting therefrom and which is fittable inside the bore (22).

6. Tooth brush, as in claim 5, characterized in that the bore (22) is a throughbore.

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Application No: GB 0022717.3 **Examiner:** Brian B Caswell
Claims searched: 1-6 **Date of search:** 17 January 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A4K (KDC)

Int Cl (Ed.7): A46B

Other: Online databases: WPI; EPODOC; JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB2214420 A	(PAI) see whole document	1-6
X	GB 690422	(UNIVERSAL METAL) see Fig 3	1-3
XP	EP 1023855 A2	(WIEGNER) see whole document	1,3-6
X	EP 0392987 A1	(ESPOSTI) see whole document	1,3,4
X	WO 98/18363 A1	(ZIVNY) see Fig 1	1-4
X	WO 90/08488 A1	(INROEL) see Fig 2	1-4
X	US 5345646	(ROTHWEILER) see whole document	1,2
X	US 5224234	(ARSENAULT) see Fig 26	1,3-6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.